

IX. POLLUTION PREVENTION OPPORTUNITIES

The best way to reduce pollution is to prevent it in the first place. Some companies have creatively implemented pollution prevention techniques that improve efficiency and increase profits while at the same time minimizing environmental impacts. This can be done in many ways such as reducing material inputs, re-engineering processes to reuse by-products, improving management practices, and employing substitution of toxic chemicals. Some smaller facilities are able to actually get below regulatory thresholds just by reducing pollutant releases through aggressive pollution prevention policies.

In order to encourage these approaches, this section provides both general and company-specific descriptions of some pollution prevention advances that have been implemented within the Nonferrous Metals Industry. While the list is not exhaustive, it does provide core information that can be used as the starting point for facilities interested in beginning their own pollution prevention projects. When possible, this section provides information from real activities that can, or are being implemented by this sector -- including a discussion of associated costs, time frames, and expected rates of return. This section provides summary information from activities that may be, or are being implemented by this sector. When possible, information is provided that gives the context in which the techniques can be effectively used. Please note that the activities described in this section do not necessarily apply to all facilities that fall within this sector. Facility-specific conditions must be carefully considered when pollution prevention options are evaluated, and the full impacts of the change must examine how each option affects, air, land, and water pollutant releases.

IX.A. Identification of Pollution Prevention Activities in Use

Pollution prevention, whether through source material reduction/reuse, or waste recycling, is practiced in various sectors of the nonferrous metals industry. Pollution prevention techniques and processes currently used by the nonferrous metals industry can be grouped into the following general categories:

- Process equipment modification,
- Raw materials substitution or elimination,
- Solvent recycling, and
- Precious metals recovery.

It is interesting to note that while the stated rationale for the use of many of these techniques or processes is applicable environmental regulations, their use is both

fairly universal and profitable.

Process equipment modification is used to reduce the amount of waste generated. Many copper, lead, and zinc refiners have modified their production processes by installing sulfur fixation equipment. This equipment not only captures the sulfur before it enters the atmosphere (helping the refining plant meet CAA sulfur standards), but processes it so that a marketable sulfuric acid is produced. Another example is the use of pre-baked anodes in primary aluminum refining. When a pre-baked anode is used, the electrolytic cell, or pot, can be closed, thereby increasing the efficiency of the collection of fluoride emissions. In addition, new carbon liners have been developed which significantly increase the life of the aluminum reduction cell. This has resulted in large reductions in the amount of spent potliner material (hazardous waste K088) generated by the aluminum industry.

Raw material substitution or elimination is the replacement of raw materials with other materials that produce less waste, or a non-toxic waste. Material substitution is inherent in the secondary nonferrous metals industry primarily by substituting scrap metal, slag, and baghouse dust for ore feedstock. All of these materials, whether in the form of aluminum beverage cans, copper scrap, or lead-acid batteries, are commonly added to other feedstock or charges (usually slag containing residual metals) to produce marketable grades of metal. Primary nonferrous metals refining also uses previously refined metals as feedstock, especially zinc-containing electric arc furnace dust (a by-product of the iron and steel industry).

Precious metals recovery is the modification of a refining process to allow the capture of marketable precious metals such as gold and silver. Like sulfur fixation, precious metals recovery is a common waste minimization practice. During primary copper smelting, appreciable amounts of silver and gold present in copper ore will be concentrated into the anode copper and can be recovered as a by-product in the electrorefining process (as the copper anode is electrochemically dissolved and the copper attaches itself to the cathode, silver and gold drop out and are captured in the slime at the bottom of the tank). In the lead refining process the copper often present in lead ore is removed during the initial lead bullion smelting process as a constituent of dross. Silver and gold are removed from the lead bullion later in the process by adding certain fluxes which cause them to form an impure alloy. The alloy is then refined electrolytically and separated into gold and silver. Precious metals recovery also takes place during zinc refining to separate out copper, a frequent impurity in zinc ore. Copper is removed from the zinc ore during the zinc purification process (after zinc undergoes leaching, zinc dust is added which forces many of the deleterious elements to drop out; copper is recovered in a cake form and sent for refining).

IX.B. Important Pollution Prevention Case Studies

Various pollution prevention case histories have been documented for nonferrous metals refining industries. In particular, the actions of the AMPCO Metal Manufacturing Company, Inc. typify industry efforts to simultaneously lessen the impact of the industrial process on the environment, reduce energy consumption, and lower production costs.

AMPCO Metal Manufacturing Company, Inc., in Ohio is participating in the development of pollution prevention technologies. The project, sponsored by the U.S. DOE and EPA, consists of researching and developing the use of electric induction to replace fossil fuel combustion currently used to heat tundishes. Tundishes are used to contain the heated reservoir of molten alloy in the barstock casting process. The fossil fuel combustion process currently used requires huge amounts of energy and produces tremendous amounts of waste gases, including combustion bases and lead and nickel emissions. According to new OSHA regulations, lead emissions from foundries must be reduced by 80 percent by 1998.

Heating the tundish by electric induction instead of fossil fuel combustion will substantially improve the current process, saving energy and reducing pollution. Energy efficiency will jump to an estimated 98 percent, saving 28.9 billion Btu/yr/unit. Industry-wide energy savings in 2010 are estimated to be 206 billion Btu/yr, assuming a 70 percent adoption at U.S. foundries.

In addition to the energy savings, the new process also has substantial environmental benefits. Along with the elimination of lead and nickel gases, carbon dioxide, carbon monoxide, and nitrogen oxide emissions from combustion will decrease. The consumption of refractory (a heat-resisting ceramic material) will decline by 80 percent, resulting in a similar reduction of refractory waste disposal. In all, prevention of various forms of pollution is estimated to be 147 million lb (66.7 million kg)/yr by 2010.

Economically, the elimination of lead and nickel emissions will result in an improved product because exposure of the metal to combustion gases in the current process results in porosity and entrainment of hydrogen gas in the metal. Overall, AMPCO estimates an annual savings in operations and maintenance expenses of \$1.2 million with the use of this technology. Assuming the same 70 percent industry adoption, economic savings by 2010 could reach \$5.8 million. Without the new electric induction heating process, the capital costs required for compliance could be \$3 million.

X. SUMMARY OF FEDERAL STATUTES AND REGULATIONS

This section discusses the Federal statutes and regulations that may apply to this sector. The purpose of this section is to highlight, and briefly describe the applicable Federal requirements, and to provide citations for more detailed information. The three following sections are included.

- Section X.A contains a general overview of major statutes
- Section X.B contains a list of regulations specific to this industry
- Section X.C contains a list of pending and proposed regulations

The descriptions within Section X are intended solely for general information. Depending upon the nature or scope of the activities at a particular facility, these summaries may or may not necessarily describe all applicable environmental requirements. Moreover, they do not constitute formal interpretations or clarifications of the statutes and regulations. For further information, readers should consult the Code of Federal Regulations and other state or local regulatory agencies. EPA Hotline contacts are also provided for each major statute.

X.A. General Description of Major Statutes

Resource Conservation And Recovery Act

The Resource Conservation And Recovery Act (RCRA) of 1976 which amended the Solid Waste Disposal Act, addresses solid (Subtitle D) and hazardous (Subtitle C) waste management activities. The Hazardous and Solid Waste Amendments (HSWA) of 1984 strengthened RCRA's waste management provisions and added Subtitle I, which governs underground storage tanks (USTs).

Regulations promulgated pursuant to Subtitle C of RCRA (40 CFR Parts 260-299) establish a "cradle-to-grave" system governing hazardous waste from the point of generation to disposal. RCRA hazardous wastes include the specific materials listed in the regulations (commercial chemical products, designated with the code "P" or "U"; hazardous wastes from specific industries/sources, designated with the code "K"; or hazardous wastes from non-specific sources, designated with the code "F") or materials which exhibit a hazardous waste characteristic (ignitibility, corrosivity, reactivity, or toxicity and designated with the code "D").

Regulated entities that generate hazardous waste are subject to waste accumulation, manifesting, and recordkeeping standards. Facilities that treat, store, or dispose of hazardous waste must obtain a permit, either from EPA or from a State agency which EPA has authorized to implement the permitting program. Subtitle C

permits contain general facility standards such as contingency plans, emergency procedures, recordkeeping and reporting requirements, financial assurance mechanisms, and unit-specific standards. RCRA also contains provisions (40 CFR Part 264 Subpart S and §264.10) for conducting corrective actions which govern the cleanup of releases of hazardous waste or constituents from solid waste management units at RCRA-regulated facilities.

Although RCRA is a Federal statute, many States implement the RCRA program. Currently, EPA has delegated its authority to implement various provisions of RCRA to 46 of the 50 States.

Most RCRA requirements are not industry specific but apply to any company that transports, treats, stores, or disposes of hazardous waste. Here are some important RCRA regulatory requirements:

- **Identification of Solid and Hazardous Wastes** (40 CFR Part 261) lays out the procedure every generator should follow to determine whether the material created is considered a hazardous waste, solid waste, or is exempted from regulation.
- **Standards for Generators of Hazardous Waste** (40 CFR Part 262) establishes the responsibilities of hazardous waste generators including obtaining an ID number, preparing a manifest, ensuring proper packaging and labeling, meeting standards for waste accumulation units, and recordkeeping and reporting requirements. Generators can accumulate hazardous waste for up to 90 days (or 180 days depending on the amount of waste generated) without obtaining a permit.
- **Land Disposal Restrictions** (LDRs) are regulations prohibiting the disposal of hazardous waste on land without prior treatment. Under the LDRs (40 CFR 268), materials must meet land disposal restriction (LDR) treatment standards prior to placement in a RCRA land disposal unit (landfill, land treatment unit, waste pile, or surface impoundment). Wastes subject to the LDRs include solvents, electroplating wastes, heavy metals, and acids. Generators of waste subject to the LDRs must provide notification of such to the designated TSD facility to ensure proper treatment prior to disposal.
- **Used Oil Management Standards** (40 CFR Part 279) impose management requirements affecting the storage, transportation, burning, processing, and re-refining of the used oil. For parties that merely generate used oil, regulations establish storage standards. For a party considered a used oil marketer (one who generates and sells off-specification used oil directly to a used oil burner), additional tracking and paperwork requirements must

be satisfied.

- **Tanks and Containers** used to store hazardous waste with a high volatile organic concentration must meet emission standards under RCRA. Regulations (40 CFR Part 264-265, Subpart CC) require generators to test the waste to determine the concentration of the waste, to satisfy tank and container emissions standards, and to inspect and monitor regulated units. These regulations apply to all facilities who store such waste, including generators operating under the 90-day accumulation rule.
- **Underground Storage Tanks (USTs)** containing petroleum and hazardous substance are regulated under Subtitle I of RCRA. Subtitle I regulations (40 CFR Part 280) contain tank design and release detection requirements, as well as financial responsibility and corrective action standards for USTs. The UST program also establishes increasingly stringent standards, including upgrade requirements for existing tanks, that must be met by 1998.
- **Boilers and Industrial Furnaces (BIFs)** that use or burn fuel containing hazardous waste must comply with strict design and operating standards. BIF regulations (40 CFR Part 266, Subpart H) address unit design, provide performance standards, require emissions monitoring, and restrict the type of waste that may be burned.

EPA's RCRA/Superfund/UST Hotline, at (800) 424-9346, responds to questions and distributes guidance regarding all RCRA regulations. The RCRA Hotline operates weekdays from 8:30 a.m. to 7:30 p.m., EST, excluding Federal holidays.

Comprehensive Environmental Response, Compensation, And Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), a 1980 law commonly known as Superfund, authorizes EPA to respond to releases, or threatened releases, of hazardous substances that may endanger public health, welfare, or the environment. CERCLA also enables EPA to force parties responsible for environmental contamination to clean it up or to reimburse the Superfund for response costs incurred by EPA. The Superfund Amendments and Reauthorization Act (SARA) of 1986 revised various sections of CERCLA, extended the taxing authority for the Superfund, and created a free-standing law, SARA Title III, also known as the Emergency Planning and Community Right-to-Know Act (EPCRA).

The CERCLA **hazardous substance release reporting regulations** (40 CFR Part 302) direct the person in charge of a facility to report to the National Response Center (NRC) any environmental release of a hazardous substance which exceeds

a reportable quantity. Reportable quantities are defined and listed in 40 CFR § 302.4. A release report may trigger a response by EPA, or by one or more Federal or State emergency response authorities.

EPA implements **hazardous substance responses** according to procedures outlined in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR Part 300). The NCP includes provisions for permanent cleanups, known as remedial actions, and other cleanups referred to as "removals." EPA generally takes remedial actions only at sites on the National Priorities List (NPL), which currently includes approximately 1300 sites. Both EPA and states can act at other sites; however, EPA provides responsible parties the opportunity to conduct removal and remedial actions and encourages community involvement throughout the Superfund response process.

EPA's RCRA/Superfund/UST Hotline, at (800) 424-9346, answers questions and references guidance pertaining to the Superfund program. The CERCLA Hotline operates weekdays from 8:30 a.m. to 7:30 p.m., EST, excluding Federal holidays.

Emergency Planning And Community Right-To-Know Act

The Superfund Amendments and Reauthorization Act (SARA) of 1986 created the Emergency Planning and Community Right-to-Know Act (EPCRA, also known as SARA Title III), a statute designed to improve community access to information about chemical hazards and to facilitate the development of chemical emergency response plans by State and local governments. EPCRA required the establishment of State emergency response commissions (SERCs), responsible for coordinating certain emergency response activities and for appointing local emergency planning committees (LEPCs).

EPCRA and the EPCRA regulations (40 CFR Parts 350-372) establish four types of reporting obligations for facilities which store or manage specified chemicals:

- **EPCRA §302** requires facilities to notify the SERC and LEPC of the presence of any "extremely hazardous substance" (the list of such substances is in 40 CFR Part 355, Appendices A and B) if it has such substance in excess of the substance's threshold planning quantity, and directs the facility to appoint an emergency response coordinator.
- **EPCRA §304** requires the facility to notify the SERC and the LEPC in the event of a release exceeding the reportable quantity of a CERCLA hazardous substance or an EPCRA extremely hazardous substance.
- **EPCRA §§311 and 312** require a facility at which a hazardous chemical, as defined by the Occupational Safety and Health Act, is present in an

amount exceeding a specified threshold to submit to the SERC, LEPC, and local fire department material safety data sheets (MSDSs) or lists of MSDSs and hazardous chemical inventory forms (also known as Tier I and II forms). This information helps the local government respond in the event of a spill or release of the chemical.

- **EPCRA §313** requires manufacturing facilities included in SIC codes 20 through 39, which have ten or more employees, and which manufacture, process, or use specified chemicals in amounts greater than threshold quantities, to submit an annual toxic chemical release report. This report, commonly known as the Form R, covers releases and transfers of toxic chemicals to various facilities and environmental media, and allows EPA to compile the national Toxic Release Inventory (TRI) database.

All information submitted pursuant to EPCRA regulations is publicly accessible, unless protected by a trade secret claim.

EPA's EPCRA Hotline, at (800) 535-0202, answers questions and distributes guidance regarding the emergency planning and community right-to-know regulations. The EPCRA Hotline operates weekdays from 8:30 a.m. to 7:30 p.m., EST, excluding Federal holidays.

Clean Water Act

The primary objective of the Federal Water Pollution Control Act, commonly referred to as the Clean Water Act (CWA), is to restore and maintain the chemical, physical, and biological integrity of the nation's surface waters. Pollutants regulated under the CWA include "priority" pollutants, including various toxic pollutants; "conventional" pollutants, such as biochemical oxygen demand (BOD), total suspended solids (TSS), fecal coliform, oil and grease, and pH; and "non-conventional" pollutants, including any pollutant not identified as either conventional or priority.

The CWA regulates both direct and indirect discharges. The **National Pollutant Discharge Elimination System (NPDES)** program (CWA §402) controls direct discharges into navigable waters. Direct discharges or "point source" discharges are from sources such as pipes and sewers. NPDES permits, issued by either EPA or an authorized State (EPA has presently authorized forty States to administer the NPDES program), contain industry-specific, technology-based and/or water quality-based limits, and establish pollutant monitoring and reporting requirements. A facility that intends to discharge into the nation's waters must obtain a permit prior to initiating its discharge. A permit applicant must provide quantitative analytical data identifying the types of pollutants present in the facility's effluent. The permit will then set forth the conditions and effluent limitations under which a facility may make a discharge.

A NPDES permit may also include discharge limits based on Federal or State water quality criteria or standards, that were designed to protect designated uses of surface waters, such as supporting aquatic life or recreation. These standards, unlike the technological standards, generally do not take into account technological feasibility or costs. Water quality criteria and standards vary from State to State, and site to site, depending on the use classification of the receiving body of water. Most States follow EPA guidelines which propose aquatic life and human health criteria for many of the 126 priority pollutants.

Storm Water Discharges

In 1987 the CWA was amended to require EPA to establish a program to address **storm water discharges**. In response, EPA promulgated the NPDES storm water permit application regulations. Storm water discharge associated with industrial activity means the discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing or raw materials storage areas at an industrial plant (40 CFR 122.26(b)(14)). These regulations require that facilities with the following storm water discharges apply for a NPDES permit: (1) a discharge associated with industrial activity; (2)

a discharge from a large or medium municipal storm sewer system; or (3) a discharge which EPA or the State determines to contribute to a violation of a water quality standard or is a significant contributor of pollutants to waters of the United States.

The term "storm water discharge associated with industrial activity" means a storm water discharge from one of 11 categories of industrial activity defined at 40 CFR 122.26. Six of the categories are defined by SIC codes while the other five are identified through narrative descriptions of the regulated industrial activity. If the primary SIC code of the facility is one of those identified in the regulations, the facility is subject to the storm water permit application requirements. If any activity at a facility is covered by one of the five narrative categories, storm water discharges from those areas where the activities occur are subject to storm water discharge permit application requirements.

Those facilities/activities that are subject to storm water discharge permit application requirements are identified below. To determine whether a particular facility falls within one of these categories, the regulation should be consulted.

Category i: Facilities subject to storm water effluent guidelines, new source performance standards, or toxic pollutant effluent standards.

Category ii: Facilities classified as SIC 24-lumber and wood products (except wood kitchen cabinets); SIC 26-paper and allied products (except paperboard containers and products); SIC 28-chemicals and allied products (except drugs and paints); SIC 29-petroleum refining; and SIC 311-leather tanning and finishing.

Category iii: Facilities classified as SIC 10-metal mining; SIC 12-coal mining; SIC 13-oil and gas extraction; and SIC 14-nonmetallic mineral mining.

Category iv: Hazardous waste treatment, storage, or disposal facilities.

Category v: Landfills, land application sites, and open dumps that receive or have received industrial wastes.

Category vi: Facilities classified as SIC 5015-used motor vehicle parts; and SIC 5093-automotive scrap and waste material recycling facilities.

Category vii: Steam electric power generating facilities.

Category viii: Facilities classified as SIC 40-railroad transportation; SIC 41-local passenger transportation; SIC 42-trucking and warehousing (except public warehousing and storage); SIC 43-U.S. Postal Service; SIC 44-water

transportation; SIC 45-transportation by air; and SIC 5171-petroleum bulk storage stations and terminals.

Category ix: Sewage treatment works.

Category x: Construction activities except operations that result in the disturbance of less than five acres of total land area.

Category xi: Facilities classified as SIC 20-food and kindred products; SIC 21-tobacco products; SIC 22-textile mill products; SIC 23-apparel related products; SIC 2434-wood kitchen cabinets manufacturing; SIC 25-furniture and fixtures; SIC 265-paperboard containers and boxes; SIC 267-converted paper and paperboard products; SIC 27-printing, publishing, and allied industries; SIC 283-drugs; SIC 285-paints, varnishes, lacquer, enamels, and allied products; SIC 30-rubber and plastics; SIC 31-leather and leather products (except leather and tanning and finishing); SIC 323-glass products; SIC 34-fabricated metal products (except fabricated structural metal); SIC 35-industrial and commercial machinery and computer equipment; SIC 36-electronic and other electrical equipment and components; SIC 37-transportation equipment (except ship and boat building and repairing); SIC 38-measuring, analyzing, and controlling instruments; SIC 39-miscellaneous manufacturing industries; and SIC 4221-4225-public warehousing and storage.

Pretreatment Program

Another type of discharge that is regulated by the CWA is one that goes to a publicly-owned treatment works (POTWs). The national **pretreatment program** (CWA §307(b)) controls the indirect discharge of pollutants to POTWs by "industrial users." Facilities regulated under §307(b) must meet certain pretreatment standards. The goal of the pretreatment program is to protect municipal wastewater treatment plants from damage that may occur when hazardous, toxic, or other wastes are discharged into a sewer system and to protect the quality of sludge generated by these plants. Discharges to a POTW are regulated primarily by the POTW itself, rather than the State or EPA.

EPA has developed technology-based standards for industrial users of POTWs. Different standards apply to existing and new sources within each category. "Categorical" pretreatment standards applicable to an industry on a nationwide basis are developed by EPA. In addition, another kind of pretreatment standard, "local limits," are developed by the POTW in order to assist the POTW in achieving the effluent limitations in its NPDES permit.

Regardless of whether a State is authorized to implement either the NPDES or the

pretreatment program, if it develops its own program, it may enforce requirements more stringent than Federal standards.

EPA's Office of Water, at (202) 260-5700, will direct callers with questions about the CWA to the appropriate EPA office. EPA also maintains a bibliographic database of Office of Water publications which can be accessed through the Ground Water and Drinking Water resource center, at (202) 260-7786.

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) mandates that EPA establish regulations to protect human health from contaminants in drinking water. The law authorizes EPA to develop national drinking water standards and to create a joint Federal-State system to ensure compliance with these standards. The SDWA also directs EPA to protect underground sources of drinking water through the control of underground injection of liquid wastes.

EPA has developed primary and secondary drinking water standards under its SDWA authority. EPA and authorized States enforce the primary drinking water standards, which are, contaminant-specific concentration limits that apply to certain public drinking water supplies. Primary drinking water standards consist of maximum contaminant level goals (MCLGs), which are non-enforceable health-based goals, and maximum contaminant levels (MCLs), which are enforceable limits set as close to MCLGs as possible, considering cost and feasibility of attainment.

The SDWA **Underground Injection Control (UIC)** program (40 CFR Parts 144-148) is a permit program which protects underground sources of drinking water by regulating five classes of injection wells. UIC permits include design, operating, inspection, and monitoring requirements. Wells used to inject hazardous wastes must also comply with RCRA corrective action standards in order to be granted a RCRA permit, and must meet applicable RCRA land disposal restrictions standards. The UIC permit program is primarily State-enforced, since EPA has authorized all but a few States to administer the program.

The SDWA also provides for a Federally-implemented Sole Source Aquifer program, which prohibits Federal funds from being expended on projects that may contaminate the sole or principal source of drinking water for a given area, and for a State-implemented Wellhead Protection program, designed to protect drinking water wells and drinking water recharge areas.

EPA's Safe Drinking Water Hotline, at (800) 426-4791, answers questions and distributes guidance pertaining to SDWA standards. The Hotline operates from

9:00 a.m. through 5:30 p.m., EST, excluding Federal holidays.

Toxic Substances Control Act

The Toxic Substances Control Act (TSCA) granted EPA authority to create a regulatory framework to collect data on chemicals in order to evaluate, assess, mitigate, and control risks which may be posed by their manufacture, processing, and use. TSCA provides a variety of control methods to prevent chemicals from posing unreasonable risk.

TSCA standards may apply at any point during a chemical's life cycle. Under TSCA §5, EPA has established an inventory of chemical substances. If a chemical is not already on the inventory, and has not been excluded by TSCA, a premanufacture notice (PMN) must be submitted to EPA prior to manufacture or import. The PMN must identify the chemical and provide available information on health and environmental effects. If available data are not sufficient to evaluate the chemical's effects, EPA can impose restrictions pending the development of information on its health and environmental effects. EPA can also restrict significant new uses of chemicals based upon factors such as the projected volume and use of the chemical.

Under TSCA §6, EPA can ban the manufacture or distribution in commerce, limit the use, require labeling, or place other restrictions on chemicals that pose unreasonable risks. Among the chemicals EPA regulates under §6 authority are asbestos, chlorofluorocarbons (CFCs), and polychlorinated biphenyls (PCBs).

EPA's TSCA Assistance Information Service, at (202) 554-1404, answers questions and distributes guidance pertaining to Toxic Substances Control Act standards. The Service operates from 8:30 a.m. through 4:30 p.m., EST, excluding Federal holidays.

Clean Air Act

The Clean Air Act (CAA) and its amendments, including the Clean Air Act Amendments (CAAA) of 1990, are designed to "protect and enhance the nation's air resources so as to promote the public health and welfare and the productive capacity of the population." The CAA consists of six sections, known as Titles, which direct EPA to establish national standards for ambient air quality and for EPA and the States to implement, maintain, and enforce these standards through a variety of mechanisms. Under the CAAA, many facilities will be required to obtain permits for the first time. State and local governments oversee, manage, and enforce many of the requirements of the CAAA. CAA regulations appear at 40 CFR Parts 50-99.

Pursuant to Title I of the CAA, EPA has established national ambient air quality standards (NAAQSs) to limit levels of "criteria pollutants," including carbon monoxide, lead, nitrogen dioxide, particulate matter, ozone, and sulfur dioxide. Geographic areas that meet NAAQSs for a given pollutant are classified as attainment areas; those that do not meet NAAQSs are classified as non-attainment areas. Under §110 of the CAA, each State must develop a State Implementation Plan (SIP) to identify sources of air pollution and to determine what reductions are required to meet Federal air quality standards.

Title I also authorizes EPA to establish New Source Performance Standards (NSPSs), which are nationally uniform emission standards for new stationary sources falling within particular industrial categories. NSPSs are based on the pollution control technology available to that category of industrial source but allow the affected industries the flexibility to devise a cost-effective means of reducing emissions.

Under Title I, EPA establishes and enforces National Emission Standards for Hazardous Air Pollutants (NESHAPs), nationally uniform standards oriented towards controlling particular hazardous air pollutants (HAPs). Title III of the CAAA further directed EPA to develop a list of sources that emit any of 189 HAPs, and to develop regulations for these categories of sources. To date EPA has listed 174 categories and developed a schedule for the establishment of emission standards. The emission standards will be developed for both new and existing sources based on "maximum achievable control technology" (MACT). The MACT is defined as the control technology achieving the maximum degree of reduction in the emission of the HAPs, taking into account cost and other factors.

Title II of the CAA pertains to mobile sources, such as cars, trucks, buses, and planes. Reformulated gasoline, automobile pollution control devices, and vapor recovery nozzles on gas pumps are a few of the mechanisms EPA uses to regulate mobile air emission sources.

Title IV establishes a sulfur dioxide emissions program designed to reduce the formation of acid rain. Reduction of sulfur dioxide releases will be obtained by granting to certain sources limited emissions allowances, which, beginning in 1995, will be set below previous levels of sulfur dioxide releases.

Title V of the CAAA of 1990 created a permit program for all "major sources" (and certain other sources) regulated under the CAA. One purpose of the operating permit is to include in a single document all air emissions requirements that apply to a given facility. States are developing the permit programs in accordance with guidance and regulations from EPA. Once a State program is

approved by EPA, permits will be issued and monitored by that State.

Title VI is intended to protect stratospheric ozone by phasing out the manufacture of ozone-depleting chemicals and restrict their use and distribution. Production of Class I substances, including 15 kinds of chlorofluorocarbons (CFCs), will be phased out entirely by the year 2000, while certain hydrochlorofluorocarbons (HCFCs) will be phased out by 2030.

EPA's Control Technology Center, at (919) 541-0800, provides general assistance and information on CAA standards. The Stratospheric Ozone Information Hotline, at (800) 296-1996, provides general information about regulations promulgated under Title VI of the CAA, and EPA's EPCRA Hotline, at (800) 535-0202, answers questions about accidental release prevention under CAA §112(r). In addition, the Technology Transfer Network Bulletin Board System (modem access (919) 541-5742)) includes recent CAA rules, EPA guidance documents, and updates of EPA activities.

X.B. Industry-Specific Requirements

Clean Water Act (CWA)

The Clean Water Act regulates the amount of chemicals/toxins released by industries via direct and indirect wastewater/effluent discharges. Regulations developed to implement this Act establish effluent guidelines and standards for different industries. These standards usually set concentration-based limits on the discharge of a given chemical by any one facility. If a facility is discharging directly into a body of water, it must obtain a National Pollution Discharge Elimination System (NPDES) permit. If a facility is discharging to a publicly owned treatment works (POTW), it must adhere to specified pretreatment standards. The following regulations are applicable to the nonferrous metals industry.

The Metal Molding and Casting Point Source Category (40 CFR Part 464) is applicable to wastewater from these operations:

- Aluminum Casting
- Copper Casting
- Zinc Casting.

The Aluminum Forming Point Source Category (40 CFR Part 467) is applicable to wastewater from these operations:

- Rolling with Neat Oils
- Rolling with Emulsions
- Extrusion
- Forging
- Drawing with Neat Oils
- Drawing with Emulsions.

The Copper Forming Point Source Category (40 CFR Part 468) is applicable to wastewater from these operations:

- Copper Forming
- Beryllium Copper Forming.

The Nonferrous Metals Forming and Metal Powders Point Source Category (40 CFR Part 471) is applicable to wastewater from these operations:

- Lead-Tin-Bismuth Forming
- Magnesium Forming
- Nickel-Cobalt Forming
- Precious Metals Forming
- Refractory Metals Forming
- Titanium Forming
- Uranium Copper Forming
- Zinc Forming
- Zirconium-Hafnium Forming
- Metals Powders.

Clean Air Act (CAA)

The primary regulatory mechanism used to implement source emission requirements under the CAA is State Implementation Plans (SIPs). SIPs provide the States with the authority and discretion to establish a strategy to attain primary NAAQS levels. These requirements can be uniform for all sources or specifically tailored for individual sources. States are not allowed to adopt less stringent standards than NAAQS. Of particular concern to primary and secondary smelters is the fact that SIPs must include steps to reduce SO₂ source emission levels in nonattainment areas. SIPs must demonstrate that nonattainment areas, designated prior to the 1990 CAA Amendments, will achieve compliance with NAAQS as soon as possible and no later than November 1995. For nonattainment areas designated after the 1990 Amendments, compliance is also required five years after the nonattainment designation. Sections 172(c)(5) or 191 and 192 require the imposition of a construction moratorium on new or modified sources of SO₂ in nonattainment areas without a fully approved SIP until the SIP includes

appropriate permit requirements.

- NAAQS for sulfur dioxide, nitrogen dioxide, and hydrocarbons that frequently affect the smelting process are found in 40 CFR Part 50.

Also important to primary and secondary smelters is the list of 189 hazardous air pollutants (HAPs) established in the CAA, as amended in 1990. Under the CAA Amendments, Congress required EPA to identify major and area source categories associated with the emission of one or more listed HAPs. To date, EPA has identified 174 categories of sources. Congress also required EPA to promulgate emission standards for listed source categories within 10 years of the enactment of the CAA Amendments (by November 15, 2000). These standards are known as National Emission Standards for Hazardous Air Pollutants (NESHAPs).

In addition to general CAA requirements, specific standards apply to primary and secondary lead smelters, primary copper smelters, primary zinc smelters, and primary aluminum reduction plants.

The Standards of Performance for Secondary Lead Smelters (40 CFR Part 60, Subpart L) are applicable to pot furnaces of more than 250 kg charging capacity, blast furnaces, and reverberatory furnaces that commence construction after June 11, 1973.

These standards require secondary lead smelters to control discharge to the point that:

- Particulate matter emissions do not exceed 50 mg/dscm, and
- Visible emissions do not exhibit 20 percent opacity or greater.

In addition, these standards require that no owner or operator discharge any gases exhibiting 10 percent opacity or greater from any pot furnace on and after the date of performance testing.

The Standards of Performance for Primary Copper Smelters (40 CFR Part 60, Subpart P) are applicable to dryers, roasters, smelting furnaces, and copper converters that commence construction or modification after October 16, 1974.

These standards require that dryers control discharge to the point that particulate matter emissions do not exceed 50 mg/dscm. With respect to roasters, smelting furnaces, and copper converters, no gases containing sulfur dioxide in excess of 0.065 percent by volume are to be emitted. An exception is made in the case of reverberatory smelting furnaces, which are exempt during periods when the total smelter charge at the primary copper smelter contains a high volume of volatile

impurities (more than 0.2 weight percent arsenic, 0.1 weight percent antimony, 4.5 weight percent lead, or 5.5 weight percent zinc, on a dry basis).

In addition, these standards require the owner or operator of a dryer of an affected facility using a sulfuric acid plant to control discharges to the point that visible emissions do not exhibit greater than 20 percent opacity on and after the date of performance testing.

The Standards of Performance for Primary Zinc Smelters (40 CFR Part 60, Subpart Q) are applicable to roaster and sintering machine facilities in primary zinc smelters that commence construction or modification after October 16, 1974.

These standards require sintering machines to control discharges to the point that on and after the date of performance testing:

- No gases containing particulate matter in excess of 50 mg/dscm are emitted, and
- Emissions do not exhibit an opacity of greater than 20 percent.

In addition, no roaster may emit gases containing sulfur dioxide in excess of 0.065 percent by volume. The provision also stipulates that any sintering machine that eliminates more than 10 percent of the sulfur initially contained in the zinc sulfide ore concentrates will be considered a roaster. For affected primary zinc smelting facilities that use a sulfuric acid plant, no emissions greater than 20 percent opacity are allowed on and after the date of performance testing. In addition,

- No gases containing more than 50 mg/dscm may be emitted, and
- Visible emissions may not exhibit greater than 20 percent opacity.

In addition, sintering machines, electric smelting furnaces, and converters must control discharges to the point that no gases containing greater than 0.065 percent sulfur dioxide are emitted on and after the date of performance testing.

For affected primary lead smelting facilities that use a sulfuric acid plant, no visible emissions greater than 20 percent opacity are allowed on and after the date of performance testing.

The Standards of Performance for Primary Aluminum Reduction Plants (40 CFR Part 60, Subpart S) are applicable to potroom groups and anode bake plants that commence construction after October 23, 1974.

The standards require that on and after the date of performance testing affected

facilities control discharges to the point that no gases containing total fluorides are emitted on and after the date of performance testing in excess of:

- 1.0 kg/Mg of aluminum produced for potroom groups at Soderberg plants
- 0.95 kg/Mg of aluminum produced for potroom groups at prebake plants
- 0.05 kg/Mg of aluminum equivalent for anode bake plants.

Emissions slightly above these levels from Soderberg and prebake plants may be considered to be in compliance if the owner/operator demonstrates that exemplary operation and maintenance procedures are used.

In addition, on and after the date of performance testing, facilities must control discharges to the point that no emissions are discharged exhibiting greater than:

- 10 percent opacity from any potlines
- 20 percent opacity from any anode bake plant.

All of the above standards (Subparts L, P, Q, R, S) require monitoring and testing methods and procedures specific to the affected facilities.

The National Emission Standards for Hazardous Air Pollutants from Secondary Lead Smelting (40 CFR Part 63, Subpart X) are applicable to secondary lead smelters that use blast, reverberatory, rotary, or electric smelting furnaces to recover lead metal from scrap lead, primarily used lead-acid automotive batteries. These standards limit HAP emissions (lead compounds and total hydrocarbons from secondary lead smelting furnaces, refining kettles, agglomerating furnaces, dryers and fugitive dust sources, but do not affect emissions from lead smelters, lead refiners, or lead remelters.

These standards require secondary lead smelters to control:

- Process Emission sources by limiting lead compounds (metal HAP) and total hydrocarbons (organic HAP) to certain levels depending upon furnace type;
- Process Fugitive Emission Sources by requiring the use of enclosure-type hoods or containment buildings which are ventilated to control devices; and
- Fugitive Dust Sources by requiring the development of facility specific standard operating procedures.

In addition to these standards certain compliance testing, monitoring, and recordkeeping requirements also apply to these facilities. New or reconstructed sources (construction commenced after June 9, 1994) must meet these standards by June 23, 1995 or upon start up of operations. Existing secondary lead smelters have until June 23, 1997 to meet them.

Resource Conservation and Recovery Act (RCRA)

RCRA was passed in 1976, as an amendment to the Solid Waste Disposal Act, to ensure that solid wastes are managed in an environmentally sound manner. A material is classified under RCRA as a hazardous waste if the material meets the definition of solid waste (40 CFR 261.2), and that solid waste material exhibits one of the characteristics of a hazardous waste (40 CFR 261.20-24) or is specifically listed as a hazardous waste (40 CFR 261.31-33). A material defined as a hazardous waste may then be subject to Subtitle C generator (40 CFR 262), transporter (40 CFR 263), and treatment, storage, and disposal facility (40 CFR 254 and 265) requirements. The nonferrous metals industry must be concerned with the regulations addressing all these.

The greatest quantities of RCRA listed waste and characteristically hazardous waste that are generated by nonferrous metal industries are identified in Exhibit 24. For more information on identifying RCRA hazardous waste, refer to 40 CFR Part 261.

Exhibit 24
Hazardous Wastes Relevant to the Nonferrous Metal Industry

EPA Hazardous Waste No.	Hazardous Waste
D004 (arsenic) D005 (barium) D006 (cadmium) D007 (chromium) D008 (lead) D009 (mercury) D010 (selenium) D011 (silver) D035 (methyl ethyl ketone) D039 (tetra-chloroethylene) D040 (trichloro-ethylene)	Wastes which are hazardous due to the characteristic of toxicity for each of the constituents.
F001	Halogenated solvents used in degreasing: tetrachloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures/blends used in degreasing containing, before use, a total of 10 percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F002	Spent halogenated solvents; tetrachloroethylene, methylene chloride, trichlorethylene, 1,1,1-trichloroethane chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures/blends containing, before use, one or more of the above halogenated solvents or those listed in F001, F004, F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F003	Spent non-halogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, only the above spent non-halogenated solvents; and all spent solvent mixtures/blends containing, before use, one or more of the above non-halogenated solvents, and, a total of 10% or more (by volume) of one of those solvents listed in F001, F002, F004, F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F004	Spent non-halogenated solvents: cresols and cresylic acid, and nitrobenzene; all spent solvent mixtures/blends containing, before use, a total of 10% or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F005	Spent non-halogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures/blends containing, before use, a total of 10% or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these spent solvents and spent solvents mixtures.

Exhibit 24
Hazardous Wastes Relevant to the Nonferrous Metal Industry

EPA Hazardous Waste No.	Hazardous Waste
K064	Acid plant blowdown slurry/sludge resulting from the thickening of blowdown slurry from primary copper production.
K065	Surface impoundment solids contained in and dredged from surface impoundments at primary lead smelting facilities.
K066	Sludge from treatment of process wastewater and/or acid plant blowdown from primary zinc production.
K088	Spent potliners from primary aluminum reduction.
K069	Emission control dust/sludge from secondary lead smelting. (Note: this listing is stayed administratively for sludge generated from secondary acid scrubber systems. The stay will remain in effect until further administrative action is taken. If EPA takes further action effecting this stay, EPA will publish a notice of the action in the <i>Federal Register</i> .)
K100	Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting.

One set of RCRA standards that is of particular relevance to nonferrous metals industries that recycle metals and metal-containing materials is 40 CFR Part 266, Subpart H which lays out the requirements for boilers or industrial furnaces that burn hazardous waste for energy recovery or destruction, or processing for materials recovery or as an ingredient in general.

X.C. Pending and Proposed Regulatory Requirements

Clean Air Act (CAA)

In addition to the CAA requirements discussed above, EPA is currently working on several regulations that will directly affect the nonferrous metals industry. Many proposed standards will limit the air emissions from various industries by proposing Maximum Achievable Control Technology (MACT) based performance standards that will set limits on emissions based upon concentrations in the waste stream. Various potential standards are described below.

Primary Lead Smelting

Primary lead smelters are a major source of hazardous air pollutants (HAPs). Potential emissions include compounds of lead and other metallic HAPs as well as organic HAPs.

The proposed regulation will be a MACT-based performance standard that will set

limits on certain emissions based upon concentrations in the waste stream . The legal deadline is November 15, 1997.

When promulgated, these standards will regulate an industry comprised of two companies which operate three facilities in two states.

Primary Copper Smelting

Primary copper smelters are known to emit a number of HAPs listed in Section 112 of the Clean Air Act Amendments of 1990 (CAAA). While most smelters have extensive control systems for oxides of sulfur and HAPs, fugitive emissions may cause smelters to exceed major source standards.

EPA is required to promulgate 50 percent of the source categories listed in Section 112(e) CAAA by November 15, 1997. EPA plans to promulgate emissions standards for several HAPs effecting the primary copper industry by August 30, 1995

Primary Aluminum

Primary aluminum processors may be a major source of one or more HAPs. As a consequence, a MACT-based regulatory program is being developed by EPA.

The MACT based performance standards are expected to be proposed in October 1995 and to be promulgated by November 15, 1997.

Secondary Aluminum

EPA has determined that the secondary aluminum industry may reasonably be anticipated to emit several of the 189 HAPs listed in Section 112(b) of the CAA. As a result, the industry is included on the initial list of HAP emitting categories and will be on the list of categories schedule for the development of a regulatory program.

The standards will be MACT-based performance standards and are expected to be proposed in April 1996. The legal deadline for the promulgation of final standards is November 15, 1997.

Resource Conservation and Recovery Act (RCRA)

As part of EPA's groundwater protection strategy, RCRA prohibits the land disposal of most hazardous wastes until they meet a waste-specific treatment standard. While most hazardous wastes have already been assigned treatment standards, EPA must still promulgate two additional rule makings to address newly listed wastes and to make changes to the land disposal restrictions (LDR) program.

When finalized, the Phase III LDR rulemaking will establish treatment standards for some newly listed wastes and will mandate RCRA equivalent treatment be performed upon certain characteristically hazardous wastes that are injected into UIC wells under the Safe Drinking Water Act (SDWA) or managed in Subtitle D surface impoundments prior to discharge pursuant to the Clean Water Act (CWA). By consent decree, EPA must promulgate the final rule for Phase III by January 1996.

Of particular significance to the nonferrous metals industries, Phase III will restrict the land disposal of spent aluminum potliners, K088. Once the prohibition for these wastes becomes effective, the spent potliners would need to meet numeric treatment levels for at least 27 particular hazardous constituents commonly found in K088.

Phase IV will similarly restrict other newly listed or identified wastes from land disposal and create influent treatment standards to mitigate the impact of sludges, leaks, and air emissions from surface impoundments that have managed decharacterized wastes. Among those wastes that will become subject to prohibitions are characteristically hazardous mining wastes that were once excluded from regulation by the Bevill exemptions of §261.4(b)(10). In addition, Phase IV will also change the treatment standards applicable to those wastes that are prohibited from land disposal because they exhibit the characteristic of toxicity for a metal constituent.

XI. COMPLIANCE AND ENFORCEMENT PROFILE

Background

To date, EPA has focused much of its attention on measuring compliance with specific environmental statutes. This approach allows the Agency to track compliance with the Clean Air Act, the Resource Conservation and Recovery Act, the Clean Water Act, and other environmental statutes. Within the last several years, the Agency has begun to supplement single-media compliance indicators with facility-specific, multimedia indicators of compliance. In doing so, EPA is in a better position to track compliance with all statutes at the facility level, and within specific industrial sectors.

A major step in building the capacity to compile multimedia data for industrial sectors was the creation of EPA's Integrated Data for Enforcement Analysis (IDEA) system. IDEA has the capacity to "read into" the Agency's single-media databases, extract compliance records, and match the records to individual facilities. The IDEA system can match Air, Water, Waste, Toxics/Pesticides/EPCRA, TRI, and Enforcement Docket records for a given facility, and generate a list of historical permit, inspection, and enforcement activity. IDEA also has the capability to analyze data by geographic area and corporate holder. As the capacity to generate multimedia compliance data improves, EPA will make available more in-depth compliance and enforcement information. Additionally, sector-specific measures of success for compliance assistance efforts are under development.

Compliance and Enforcement Profile Description

Using inspection, violation, and enforcement data from the IDEA system, this section provides information regarding the historical compliance and enforcement activity of this sector. In order to mirror the facility universe reported in the Toxic Chemical Profile, the data reported within this section consists of records only from the TRI reporting universe. With this decision, the selection criteria are consistent across sectors with certain exceptions. For the sectors that do not normally report to the TRI program, data have been provided from EPA's Facility Indexing System (FINDS) which tracks facilities in all media databases. Please note, in this section, EPA does not attempt to define the actual number of facilities that fall within each sector. Instead, the section portrays the records of a subset of facilities within the sector that are well defined within EPA databases.

As a check on the relative size of the full sector universe, most notebooks contain an estimated number of facilities within the sector according to the Bureau of Census (See Section II). With sectors dominated by small businesses, such as

metal finishers and printers, the reporting universe within the EPA databases may be small in comparison to Census data. However, the group selected for inclusion in this data analysis section should be consistent with this sector's general make-up.

Following this introduction is a list defining each data column presented within this section. These values represent a retrospective summary of inspections and enforcement actions, and solely reflect EPA, State, and local compliance assurance activities that have been entered into EPA databases. To identify any changes in trends, the EPA ran two data queries, one for the past five calendar years (August 10, 1990 to August 9, 1995) and the other for the most recent twelve-month period (August 10, 1994 to August 9, 1995). The five-year analysis gives an average level of activity for that period for comparison to the more recent activity.

Because most inspections focus on single-media requirements, the data queries presented in this section are taken from single media databases. These databases do not provide data on whether inspections are State/local or EPA-led. However, the table breaking down the universe of violations does give the reader a crude measurement of the EPA's and States' efforts within each media program. The presented data illustrate the variations across regions for certain sectors.² This variation may be attributable to State/local data entry variations, specific geographic concentrations, proximity to population centers, sensitive ecosystems, highly toxic chemicals used in production, or historical noncompliance. Hence, the exhibited data do not rank regional performance or necessarily reflect which regions may have the most compliance problems.

Compliance and Enforcement Data Definitions

General Definitions

Facility Indexing System (FINDS) -- this system assigns a common facility number to EPA single-media permit records. The FINDS identification number allows EPA to compile and review all permit, compliance, enforcement, and pollutant release data for any given regulated facility.

Integrated Data for Enforcement Analysis (IDEA) -- is a data integration system that can retrieve information from the major EPA program office databases. IDEA uses the FINDS identification number to "glue together" separate data records from EPA's databases. This is done to create a "master list" of data records for any given facility. Some of the data systems accessible through IDEA are: AIRS (Air Facility Indexing and Retrieval System, Office of Air and Radiation), PCS (Permit Compliance System, Office of Water), RCRIS (Resource

Conservation and Recovery Information System, Office of Solid Waste), NCDB (National Compliance Data Base, Office of Prevention, Pesticides, and Toxic Substances), CERCLIS (Comprehensive Environmental and Liability Information System, Superfund), and TRIS (Toxic Release Inventory System). IDEA also contains information from outside sources such as Dun and Bradstreet and the Occupational Safety and Health Administration (OSHA). Most data queries displayed in notebook Sections IV and VII were conducted using IDEA.

Data Table Column Heading Definitions

Facilities in Search -- are based on the universe of TRI reporters within the listed SIC code range. For industries not covered under TRI reporting requirements, the notebook uses the FINDS universe for executing data queries. The SIC code range selected for each search is defined by each notebook's selected SIC code coverage described in Section II.

Facilities Inspected --- indicates the level of EPA and State agency facility inspections for the facilities in this data search. These values show what percentage of the facility universe is inspected in a 12 or 60 month period. This column does not count non-inspectional compliance activities such as the review of facility-reported discharge reports.

Number of Inspections -- measures the total number of inspections conducted in this sector. An inspection event is counted each time it is entered into a single media database.

Average Time Between Inspections -- provides an average length of time, expressed in months, that a compliance inspection occurs at a facility within the defined universe.

Facilities with One or More Enforcement Actions -- expresses the number of facilities that were party to at least one enforcement action within the defined time period. This category is broken down further into Federal and State actions. Data are obtained for administrative, civil/judicial, and criminal enforcement actions. Administrative actions include Notices of Violation (NOVs). A facility with multiple enforcement actions is only counted once in this column (facility with 3 enforcement actions counts as 1). All percentages that appear are referenced to the number of facilities inspected.

Total Enforcement Actions -- describes the total number of enforcement actions identified for an industrial sector across all environmental statutes. A facility with multiple enforcement actions is counted multiple times (a facility with 3 enforcement actions counts as 3).

State Lead Actions -- shows what percentage of the total enforcement actions are taken by State and local environmental agencies. Varying levels of use by States of EPA data systems may limit the volume of actions accorded State enforcement activity. Some States extensively report enforcement activities into EPA data systems, while other States may use their own data systems.

Federal Lead Actions -- shows what percentage of the total enforcement actions are taken by the U.S. EPA. This value includes referrals from State agencies. Many of these actions result from coordinated or joint State/Federal efforts.

Enforcement to Inspection Rate -- expresses how often enforcement actions result from inspections. This value is a ratio of enforcement actions to inspections, and is presented for comparative purposes only. This measure is a rough indicator of the relationship between inspections and enforcement. This measure simply indicates historically how many enforcement actions can be attributed to inspection activity. Related inspections and enforcement actions under the Clean Water Act (PCS), the Clean Air Act (AFS) and the Resource Conservation and Recovery Act (RCRA) are included in this ratio. Inspections and actions from the TSCA/FIFRA/EPCRA database are not factored into this ratio because most of the actions taken under these programs are not the result of facility inspections. This ratio does not account for enforcement actions arising from non-inspection compliance monitoring activities (e.g., self-reported water discharges) that can result in enforcement action within the CAA, CWA and RCRA.

Facilities with One or More Violations Identified -- indicates the number and percentage of inspected facilities having a violation identified in one of the following data categories: In Violation or Significant Violation Status (CAA); Reportable Noncompliance, Current Year Noncompliance, Significant Noncompliance (CWA); Noncompliance and Significant Noncompliance (FIFRA, TSCA, and EPCRA); Unresolved Violation and Unresolved High Priority Violation (RCRA). The values presented for this column reflect the extent of noncompliance within the measured time frame, but do not distinguish between the severity of the noncompliance. Percentages within this column can exceed 100 percent because facilities can be in violation status without being inspected. Violation status may be a precursor to an enforcement action, but does not necessarily indicate that an enforcement action will occur.

Media Breakdown of Enforcement Actions and Inspections -- four columns identify the proportion of total inspections and enforcement actions within EPA Air, Water, Waste, and TSCA/FIFRA/EPCRA databases. Each column is a percentage of either the "Total Inspections," or the "Total Actions" column.

XI.A. Nonferrous Metals Industry Compliance History

Exhibit 25 presents enforcement and compliance information specific to SIC 33, the nonferrous metals industry (information was not available beyond the two-digit SIC level). As indicated in this exhibit, Region 4 conducted the largest number of inspections in this industry, and nearly all of Region 4's enforcement actions are also state-lead. The numbers in this exhibit do not necessarily represent the geographic location of the industry's primary and secondary processors. This is because the number facilities and inspections represents all SIC 33 facilities and not just SIC 333 and 334 facilities.

Exhibit 25
Five Year Enforcement and Compliance Summary for the Nonferrous Metals Industry

A	B	C	D	E	F	G	H	I	J
Nonferrous Metals SIC 33	Facilities in Search	Facilities Inspected	Number of Inspections	Average Number of Months Between Inspections	Facilities w/one or more Enforcement Actions	Total Enforcement Actions	State Lead Actions	Federal Lead Actions	Enforcement to Inspection Rate
Region I	67	35	144	28	13	21	38%	62%	0.15
Region II	71	54	362	12	25	89	83%	17%	0.25
Region III	77	54	447	10	20	69	80%	20%	0.15
Region IV	136	92	870	9	22	65	86%	14%	0.08
Region V	270	126	632	26	24	66	77%	23%	0.10
Region VI	72	40	205	21	13	40	52%	48%	0.20
Region VII	43	23	156	17	8	17	59%	41%	0.11
Region VIII	17	10	56	18	4	15	67%	33%	0.27
Region IX	71	24	69	62	7	16	81%	19%	0.23
Region X	20	16	156	8	9	72	85%	15%	0.46
Total/Average	844	474	3,097	16	145	470	76%	24%	0.15

XI.B. Comparison of Enforcement Activity Between Selected Industries

Exhibits 26-29 provide enforcement and compliance information for selected industries. The nonferrous metals industry (all of SIC 33) comprises the 4th largest number of facilities tracked by EPA across the selected industries, and the 5th largest number of facilities inspected. However it has the 3rd largest number of inspections and 2nd largest number of enforcement actions. For this industry, RCRA inspections comprise over 39 percent of all inspections conducted, while CWA inspections account for 23 percent and CAA inspections account for 34 percent. The fairly high CWA inspection rate and low CAA inspection rate seem to be in conflict with the importance of air emissions in the primary and secondary nonferrous metals processing industry; however this may be due to the fact that numbers represent the entire SIC 33 and not the more specific three-digit SIC 333 and 334 level.

Exhibit 26
Five Year Enforcement and Compliance Summary for Selected Industries

A	B	C	D	E	F	G	H	I	J
Industry Sector	Facilities in Search	Facilities Inspected	Number of Inspections	Average Number of Months Between Inspections	Facilities w/One or More Enforcement Actions	Total Enforcement Actions	State Lead Actions	Federal Lead Actions	Enforcement to Inspection Rate
Metal Mining	873	339	1,519	34	67	155	47%	53%	0.10
Non-metallic Mineral Mining	1,143	631	3,422	20	84	192	76%	24%	0.06
Lumber and Wood	464	301	1,891	15	78	232	79%	21%	0.12
Furniture	293	213	1,534	11	34	91	91%	9%	0.06
Rubber and Plastic	1,665	739	3,386	30	146	391	78%	22%	0.12
Stone, Clay, and Glass	468	268	2,475	11	73	301	70%	30%	0.12
Nonferrous Metals	844	474	3,097	16	145	470	76%	24%	0.15
Fabricated Metal	2,346	1,340	5,509	26	280	840	80%	20%	0.15
Electronics/Computers	405	222	777	31	68	212	79%	21%	0.27
Motor Vehicle Assembly	598	390	2,216	16	81	240	80%	20%	0.11
Pulp and Paper	306	265	3,766	5	115	502	78%	22%	0.13
Printing	4,106	1,035	4,723	52	176	514	85%	15%	0.11
Inorganic Chemicals	548	298	3,034	11	99	402	76%	24%	0.13
Organic Chemicals	412	316	3,864	6	152	726	66%	34%	0.19
Petroleum Refining	156	145	3,257	3	110	797	66%	34%	0.25
Iron and Steel	374	275	3,555	6	115	499	72%	28%	0.14
Dry Cleaning	933	245	633	88	29	103	99%	1%	0.16

Exhibit 27
One Year Enforcement and Compliance Summary for Selected Industries

A Industry Sector	B Facilities in Search	C Facilities Inspected	D Number of Inspections	E Facilities w/One or More Violations		F Facilities w/One or More Enforcement Actions		G Total Enforcement Actions	H Enforcement to Inspection Rate
				Number	Percent*	Number	Percent*		
Metal Mining	873	114	194	82	72%	16	14%	24	0.13
Non-metallic Mineral Mining	1,143	253	425	75	30%	28	11%	54	0.13
Lumber and Wood	464	142	268	109	77%	18	13%	42	0.15
Furniture	293	160	113	66	41%	3	2%	5	0.04
Rubber and Plastic	1,665	271	435	289	107%	19	7%	59	0.14
Stone, Clay, and Glass	468	146	330	116	79%	20	14%	66	0.20
Nonferrous Metals	844	202	402	282	140%	22	11%	72	0.18
Fabricated Metal	2,346	477	746	525	110%	46	10%	114	0.15
Electronics/Computers	405	60	87	80	133%	8	13%	21	0.24
Motor Vehicle Assembly	598	169	284	162	96%	14	8%	28	0.10
Pulp and Paper	306	189	576	162	86%	28	15%	88	0.15
Printing	4,106	397	676	251	63%	25	6%	72	0.11
Inorganic Chemicals	548	158	427	167	106%	19	12%	49	0.12
Organic Chemicals	412	195	545	197	101%	39	20%	118	0.22
Petroleum Refining	156	109	437	109	100%	39	36%	114	0.26
Iron and Steel	374	167	488	165	99%	20	12%	46	0.09
Dry Cleaning	933	80	111	21	26%	5	6%	11	0.10
*Percentages in Columns E and F are based on the number of facilities inspected (Column C). Percentages can exceed 100% because violations and actions can occur without a facility inspection.									

Exhibit 28

Five Year Inspection and Enforcement Summary by Statute for Selected Industries

Industry Sector	Number of Facilities Inspected	Total Inspections	Enforcement Actions	Clean Air Act		Clean Water Act		Resource Conservation and Recovery Act		FIFRA/TSCA/* EPCRA/Other	
				% of Total Inspections	% of Total Actions	% of Total Inspections	% of Total Actions	% of Total Inspections	% of Total Actions	% of Total Inspections	% of Total Actions
Metal Mining	339	1,519	155	35%	17%	57%	60%	6%	14%	1%	9%
Non-metallic Mineral Mining	631	3,422	192	65%	46%	31%	24%	3%	27%	<1%	4%
Lumber and Wood	301	1,891	232	31%	21%	8%	7%	59%	67%	2%	5%
Furniture	293	1,534	91	52%	27%	1%	1%	45%	64%	1%	8%
Rubber and Plastic	739	3,386	391	39%	15%	13%	7%	44%	68%	3%	10%
Stone, Clay and Glass	268	2,475	301	45%	39%	15%	5%	39%	51%	2%	5%
Nonferrous Metals	474	3,097	470	36%	22%	22%	13%	38%	54%	4%	10%
Fabricated Metal	1,340	5,509	840	25%	11%	15%	6%	56%	76%	4%	7%
Electronics/Computers	222	777	212	16%	2%	14%	3%	66%	90%	3%	5%
Motor Vehicle Assembly	390	2,216	240	35%	15%	9%	4%	54%	75%	2%	6%
Pulp and Paper	265	3,766	502	51%	48%	38%	30%	9%	18%	2%	3%
Printing	1,035	4,723	514	49%	31%	6%	3%	43%	62%	2%	4%
Inorganic Chemicals	302	3,034	402	29%	26%	29%	17%	39%	53%	3%	4%
Organic Chemicals	316	3,864	726	33%	30%	16%	21%	46%	44%	5%	5%
Petroleum Refining	145	3,237	797	44%	32%	19%	12%	35%	52%	2%	5%
Iron and Steel	275	3,555	499	32%	20%	30%	18%	37%	58%	2%	5%
Dry Cleaning	245	633	103	15%	1%	3%	4%	83%	93%	<1%	1%

*

Actions taken to enforce the Federal Insecticide, Fungicide, and Rodenticide Act; the Toxic Substances and Control Act, and the Emergency Planning and Community Right-to-Know Act as well as other Federal environmental laws.

Exhibit 29
One Year Inspection and Enforcement Summary by Statute for Selected Industries

Industry Sector	Number of Facilities Inspected	Total Inspections	Enforcement Actions	Clean Air Act		Clean Water Act		Resource Conservation and Recovery Act		FIFRA/TSCA/EPCRA/Other	
				% of Total Inspections	% of Total Actions	% of Total Inspections	% of Total Actions	% of Total Inspections	% of Total Actions	% of Total Inspections	% of Total Actions
Metal Mining	114	194	24	47%	42%	43%	34%	10%	6%	<1%	19%
Non-metallic Mineral Mining	253	425	54	69%	58%	26%	16%	5%	16%	<1%	11%
Lumber and Wood	142	268	42	29%	20%	8%	13%	63%	61%	<1%	6%
Furniture	293	160	5	58%	67%	1%	10%	41%	10%	<1%	13%
Rubber and Plastic	271	435	59	39%	14%	14%	4%	46%	71%	1%	11%
Stone, Clay, and Glass	146	330	66	45%	52%	18%	8%	38%	37%	<1%	3%
Nonferrous Metals	202	402	72	33%	24%	21%	3%	44%	69%	1%	4%
Fabricated Metal	477	746	114	25%	14%	14%	8%	61%	77%	<1%	2%
Electronics/Computers	60	87	21	17%	2%	14%	7%	69%	87%	<1%	4%
Motor Vehicle Assembly	169	284	28	34%	16%	10%	9%	56%	69%	1%	6%
Pulp and Paper	189	576	88	56%	69%	35%	21%	10%	7%	<1%	3%
Printing	397	676	72	50%	27%	5%	3%	44%	66%	<1%	4%
Inorganic Chemicals	158	427	49	26%	38%	29%	21%	45%	36%	<1%	6%
Organic Chemicals	195	545	118	36%	34%	13%	16%	50%	49%	1%	1%
Petroleum Refining	109	439	114	50%	31%	19%	16%	30%	47%	1%	6%
Iron and Steel	167	488	46	29%	18%	35%	26%	36%	50%	<1%	6%
Dry Cleaning	80	111	11	21%	4%	1%	22%	78%	67%	<1%	7%

* Actions taken to enforce the Federal Insecticide, Fungicide, and Rodenticide Act; the Toxic Substances and Control Act, and the Emergency Planning and Community Right-to-Know Act as well as other Federal environmental laws.

XI.C. Review of Major Enforcement Actions

XI.C.1. Review of Major Cases

This section provides summary information about major cases that have affected this sector. As indicated in EPA's *Enforcement Accomplishments Report, FY 1991 - FY 1993* publications, 12 significant enforcement cases were resolved between 1991 and 1993 involving the nonferrous metals industry. Five of the cases were comprised of RCRA violations, five of CERCLA violations, and two involved violations of the Clean Water Act (CWA). One case, U.S. v. ILCO (Interstate Lead Company), et. al., settled in 1992 and 1993, involved violations of all three statutes.

Six of the 12 cases resulted in the assessment of a penalty. Civil penalties ranged from \$453,750 to \$3.5 million. The average penalty was approximately \$1.9 million. In U.S. v. Cerro Copper (1991), a consent decree was entered requiring Cerro to recycle its waste waters in order to meet pre-treatment limits for copper and other nonferrous metals at one of its plants. In addition, the company was required to pay a civil penalty of \$1.4 million for its CWA violation.

Some of the settlements required defendants to pay only the past or future cleanup costs of the remedial action. In U.S. et. al. v. Alcan Aluminum Corp. et. al. (1991), the District Court granted the government's motion of summary judgment against Alcan Aluminum, a PRP at the Pollution Abatement Services Superfund site. The penalty was \$4 million in past costs from this case and \$9.1 million in past costs from an unsettled 1987 case. Violations included illegal dumping of PCBs, and about 4.6 million gallons of waste emulsion contaminated with small quantities of metals including lead, cadmium, and chromium.

In U.S. v. Sanders Lead Co. (1993), a consent decree was entered requiring \$2 million in civil penalties and the treatment of waste water as a hazardous waste. This consent decree resolved alleged violations involving illegal disposal of lead-bearing hazardous wastes and violations of land disposal restrictions. This was the first civil case that the U.S. filed to enforce land disposal restrictions, and settles a RCRA enforcement action concerning violations at a Troy, Alabama secondary lead smelter.

In the 1993 RCRA case of U.S. v. ILCO et. al., the Court of Appeals held that lead components from spent automobile batteries were discarded and hence could be regulated as "solid waste" under RCRA. The Appeals Court affirmed the district court's award of \$3.5 million in civil penalties and \$845,033 in CERCLA response costs for violations of RCRA, the CWA, and corresponding Alabama statutes. The action arose from ILCO's operations at its secondary smelter which

reprocessed spent-lead acid batteries.

XI.C.2. Supplemental Environmental Projects

Supplementary Environmental Projects (SEPs) are compliance agreements that reduce a facility's stipulated penalty in return for an environmental project that exceeds the value of the reduction. Often, these projects fund pollution prevention activities that can significantly reduce the future pollutant loadings of a facility.

In December, 1993, the Regions were asked by EPA's Office of Enforcement and Compliance Assurance to provide information on the number and type of SEPs entered into by the Regions. The following chart contains a representative sample of the Regional responses addressing the primary and secondary nonferrous metals industry. The information contained in Exhibit 30 is not comprehensive and provides only a sample of the types of SEPs developed for the primary and secondary nonferrous metals industry.

Exhibit 30 - SEP Chart
Supplemental Environmental Projects
Nonferrous Metal (SIC 33)

Case Name	EPA Region	Statute / Type of Action	Type of SEP	Estimated Cost to Company	Expected Environmental Benefits	Final Assessed Penalty	Final Penalty After Mitigation
Kaiser Aluminum and Chemical Corporation Tacoma, WA	10	TSCA	Pollution Reduction	\$ 12,750	Early disposal of PCB-contaminated electrical equipment.	\$ 12,750	\$ 6,375
Southern Foundry Supply	4	EPCRA	Pollution Reduction	\$ 34,000	Assess the feasibility of a process to recover pure nickel from plant wastestreams. Construct a pilot plant to perform the recovery to reduce the quantity of heavy metals entering environment.	\$ 15,840	\$ 2,376
Aluminum Company of America (ALCOA) Port Lavaca, TX	6	CERCLA (failure to report release)	Equipment Donation	\$ 10,000	Donate equipment to the Local Emergency Planning Committee (LEPC) to assist local officials in emergency responses to chemical emergencies. Develop and submit article on CERCLA compliance to a national trade journal to assist other facilities in reporting duties.	\$ 25,000	\$ 3,000
Elken Metals Company Alloy, WV	3		Pollution Reduction	\$ 449,000	Remove PCB items including PCB transformers and PCB capacitors, and retrofitting PCB-contaminated transformers to reduce the amount of PCBs which may be released to the environment.	\$ 280,000	\$ 17,250
J.W. Harris, Inc. Cincinnati, OH	5	EPCRA	Pollution Prevention	\$189,350	Correct past EPCRA violations and modify industrial processes. Modification will reduce the releases of silver by 713 lbs/yr; copper by 1592 lbs/yr; antimony by 55 lbs/yr; zinc by 5847 lbs/yr; and nickel by 15 lbs/yr.	\$109,500	\$10,950

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XII. COMPLIANCE ACTIVITIES AND INITIATIVES

This section highlights the activities undertaken by this industry sector and public agencies to voluntarily improve the sector's environmental performance. These activities include those independently initiated by industrial trade associations. In this section, the notebook also contains a listing and description of national and regional trade associations.

XII.A. Sector Related Environmental Programs and Activities

Voluntary Aluminum Industrial Partnership

The EPA's Voluntary Aluminum Industrial Partnership (VAIP) is an innovative environmental stewardship and pollution prevention program developed jointly by the EPA and the U.S. primary aluminum industry to promote cost-effective reduction in perfluorocarbon. Companies joining the VAIP commit to reductions in perfluorocarbon (PFC) emission released during the production of aluminum and to provide data to EPA that tracks their progress toward reduction targets. In turn, EPA provides VAIP Partners with recognition for their pollution prevention initiative, and for their accomplishments in achieving PFC reductions.

The Partnership has been designed with important and unique characteristics that reflect both the diversity within the primary aluminum industry and the differences between this and other industries. These unique characteristics include: flexibility; a joint commitment to finding answers to critical technical questions; and a clear course for achieving substantial pollution prevention goals by the year 2000. EPA estimates that the VAIP will achieve reductions in PFC emissions of 30-60 percent across the U.S. primary aluminum industry — or 1.8 mmt of carbon equivalent — by the year 2000.

XII.B. EPA Voluntary Programs

33/50 Program

The "33/50 Program" is EPA's voluntary program to reduce toxic chemical releases and transfers of 17 chemicals from manufacturing facilities. Participating companies pledge to reduce their toxic chemical releases and transfers by 33 percent as of 1992 and by 50 percent as of 1995 from the 1988 baseline year. Certificates of Appreciation have been given to participants who met their 1992 goals. The list of chemicals includes 17 high-use chemicals reported in the Toxics Release Inventory.

Ninety-three companies listed under SIC 333-334 (primary and secondary metals industry) are currently participating in the 33/50 program. They account for 72 percent of the 129 companies under SIC 333-334, which is higher than the average for all industries of 14 percent participation. (Contact: Mike Burns 202-260-6394 or the 33/50 Program 202-260-6907)

Exhibit 31 lists those companies participating in the 33/50 program that reported under SIC code 333-334 to TRI. Many of the participating companies listed multiple SIC codes (in no particular order), and are therefore likely to conduct operations in addition to primary metals production. The table shows the number of facilities within each company that are participating in the 33/50 program; each company's total 1993 releases and transfers of 33/50 chemicals; and the percent reduction in these chemicals since 1988.

Exhibit 31
Nonferrous Metals Producers Participating in the 33/50 Program

Parent Facility Name	Parent City	ST	SIC Codes	# of Participating Facilities	1993 Releases and	% Reduction 1988 to
3M Minnesota Mining & Mfg Co	St. Paul	MN	3643, 3699,	1	16,481,098	70
Aluminum Company Of America	Pittsburgh	PA	3357	11	2,403,017	51
American Telephone & Telg. Co.	New York	NY	3357, 3661	4	512,618	50
Ampco Metal Mfg., Inc.	Milwaukee	WI	3362, 3351	3	3,395	*
Asarco Incorporated	New York	NY	3331	7	7,582,905	2
Avondale Industries, Inc.	Avondale	LA	3325, 3339, 3341	1	25,279	54
Baker Hughes, Incorporated	Houston	TX	3357	1	193,116	20
Ball Corporation	Muncie	IN	3341, 3356, 3471	1	721,859	86
Bethlehem Steel Corporation	Bethlehem	PA	3312, 3321, 3366	2	792,550	50
Bicc USA Inc.	Chicago	IL	3357	7	152,253	15
Brooklyn Park Oil Co., Inc.	Minneapolis	MN	3364, 3471	1	12,606	13
Cabot Corporation	Boston	MA	3339, 2819	2	2,407,581	50
Chrysler Corporation	Highland Park	MI	3363	1	3,623,717	80
Cooper Industries, Inc.	Houston	TX	3357	1	1,048,465	75
Corning, Inc.	Corning	NY	3357	2	1,521,528	14
Degussa Corporation	Ridgefield Park	NJ	3499, 3369	2	676,418	***
Dexter Corporation	Windsor Locks	CT	3341	1	122,127	51
Doe Run Company	Saint Louis	MO	3339	1	2,270,400	49
Engelhard Corporation	Iselin	NJ	3351, 2819	1	236,302	50
Farley Inc.	Chicago	IL	3366, 3743	1	58,844	2
Federal-Mogul Corporation	Southfield	MI	3365, 3366, 3471	2	255,996	50
Funk Finecast, Inc.	Columbus	OH	3324, 3365, 3366	1	491	*
General Electric Company	Fairfield	CT	2819, 3356, 3499, 3724	2	5,010,856	50
General Motors Corporation	Detroit	MI	3365, 3363	2	16,751,198	*
Halstead Industries, Inc.	Greensboro	NC	3351	1	239,910	50
Handy & Harman	New York	NY	3341	4	477,150	50
Hm Anglo-American, Ltd.	New York	NY	3646, 3363, 3469, 3471	1	1,265,741	2
Honeywell, Inc.	Minneapolis	MN	3822, 3820, 3363, 3900	1	386,054	50
Hydro Aluminum USA Inc.	Rockledge	FL	3354	1	54,700	100
INCO United States Inc.	New York	NY	3356	5	346,594	26
Indal, Ltd.	Weston, Ontario, Can		3354	2	303,909	*
Ingersoll-Rand Company	Woodcliff Lake	NJ	3369, 3471	1	96,553	60

Exhibit 31 (cont'd)
Nonferrous Metals Producers Participating in the 33/50 Program

Parent Facility Name	Parent City	ST	SIC Codes	# of Participating Facilities	1993 Releases	% Reduction
Jefferson City Mfg. Co., Inc.	Jefferson City	MO	3363, 3451, 3469	1	4,850	**
Kanthal Furnace Prods.	Bethel	CT	3315, 3316, 3357	1	21,581	41
Katy Industries, Inc.	Englewood	CO	3316, 3351, 3353, 3356	1	82,256	52
Keywell Corp.	Baltimore	MD	3341, 5093	1	58,997	*
Linderme Tube Co.	Euclid	OH	3351	1	34,960	***
Litton Industries, Inc.	Beverly Hills	CA	3356	2	332,264	**
Lorin, Ind.	Muskegon	MI	3354, 3471	1	25,500	50
Louisiana-Pacific Corporation	Portland	OR	3354	1	294,823	50
Marmon Group, Inc.	Chicago	IL	3351	7	1,092,218	1
Mascotech	Taylor	MI	3364, 3544, 3471	1	3,163,830	35
Morgan Stanley Leveraged Fund	New York	NY	3357	12	2,166,420	13
National Metals, Inc.	Leeds	AL	3341	1	510	***
National Tube Holding Company	Birmingham	AL	3351	1	78,282	75
Newell Co	Freeport	IL	3341	1	324,283	23
NGK Metals Corp.	Temple	PA	3366	2	56,600	99
Norandal USA	Brentwood	TN	3365, 3714	5	627,740	6
North American Philips Corp.	New York	NY	3357	1	1,281,928	50
Northern Precision Casting Co.	Lake Geneva	WI	3324, 3365, 3366	1	90	99
Olin Corporation	Stamford	CT	3351	5	574,673	70
Pac Foundries	Port Hueneme	CA	3324, 3365	1	4,976	75
Pace Industries, Inc.	New York	NY	3363	3	14,530	**
Parker Hannifin Corporation	Cleveland	OH	3360	1	244,966	50
Pechiney Corporation	Greenwich	CT	3341	6	216,177	***
Peco Manufacturing Co. ,Inc.	Portland	OR	3089, 3363, 3382	1	16,409	100
Peerless Of America, Inc.	Chicago	IL	3354	1	60,463	69
Progress Casting Group, Inc.	Minneapolis	MN	3363	1	15,045	95
Raytheon Company	Lexington	MA	3361	1	706,045	50
Renco Group, Inc.	New York	NY	3339	1	204,629	7
Rexcorp U S, Inc. (Del)	Sandwich	IL	3363, 3364	1	494	***
Reynolds Metals Company	Richmond	VA	3334	9	2,055,294	38
RJR Nabisco Holdings Corp.	New York	NY	2754, 3334	1	1,149,070	12
Rome Group Inc.	Rome	NY	3357	1	8,878	**
RSR Holding Corp.	Dallas	TX	3341	3	2,499,338	***
RTZmerica, Inc.	Garden City	NY	3331	1	3,576,655	32
SEH America, Inc.	Vancouver	WA	3674, 3339	1	53,140	100

Exhibit 31 (cont'd)
Nonferrous Metals Producers Participating in the 33/50 Program

Parent Facility Name	Parent City	ST	SIC Codes	# of Participating Facilities	1993 Releases	% Reduction
Spectrulite Consortium, Inc.	Madison	IL	3341, 3354, 3355, 3356	1	255	50
Spectrum ,Ltd.	Carrollton	GA	3357	6	355,325	3
T & N Inc.	Ann Arbor	MI	3321, 3365, 3714	1	670,624	**
Tecumseh Products Company	Tecumseh	MI	3361	1	29,510	28
Tenneco Inc.	Houston	TX	3353, 3081	1	1,272,423	8
Texas Instruments Incorporated	Dallas	TX	3822, 2812, 3356, 3471, 3714, 3341	1	344,225	25
U T I Corporation	Collegeville	PA	3569, 3357	1	473,872	50
United Technologies Corp.	Hartford	CT	3354	1	2,393,252	50
USX Corporation	Pittsburgh	PA	3356, 3369	1	1,510,772	25
Vanalco, Inc.	Vancouver	WA	3334	1	12,250	**
Watts Industries, Inc.	North Andover	MA	3366	3	128,842	8
Westinghouse Electric Corp.	Pittsburgh	PA	3356	2	1,137,198	28
Wolverine Tube, Inc.	Decatur	AL	3351, 3499	2	337,685	***

* = not quantifiable against 1988 data.

Environmental Leadership Program

The Environmental Leadership Program (ELP) is a national initiative piloted by EPA and State agencies in which facilities have volunteered to demonstrate innovative approaches to environmental management and compliance. EPA has selected 12 pilot projects at industrial facilities and Federal installations which will demonstrate the principles of the ELP program. These principles include: environmental management systems, multimedia compliance assurance, third-party verification of compliance, public measures of accountability, community involvement, and mentoring programs. In return for participating, pilot participants receive public recognition and are given a period of time to correct any violations discovered during these experimental projects. (Contact: Tai-ming Chang, ELP Director, 202-564-5081 or Robert Fentress, 202-564-7023)

Project XL

Project XL was initiated in March 1995 as a part of President Clinton's *Reinventing Environmental Regulation* initiative. The projects seek to achieve cost effective environmental benefits by allowing participants to replace or modify existing regulatory requirements on the condition that they produce greater environmental benefits. EPA and program participants will negotiate and sign a Final Project Agreement, detailing specific objectives that the regulated entity shall satisfy. In exchange, EPA will allow the participant a certain degree of regulatory

flexibility and may seek changes in underlying regulations or statutes. Participants are encouraged to seek stakeholder support from local governments, businesses, and environmental groups. EPA hopes to implement fifty pilot projects in four categories including facilities, sectors, communities, and government agencies regulated by EPA. Applications will be accepted on a rolling basis and projects will move to implementation within six months of their selection. For additional information regarding XL Projects, including application procedures and criteria, see the May 23, 1995 Federal Register Notice, or contact Jon Kessler at EPA's Office of Policy Analysis (202) 260-4034.

Green Lights Program

EPA's Green Lights program was initiated in 1991 and has the goal of preventing pollution by encouraging U.S. institutions to use energy-efficient lighting technologies. The program has over 1,500 participants which include major corporations; small and medium sized businesses; Federal, State and local governments; non-profit groups; schools; universities; and health care facilities. Each participant is required to survey their facilities and upgrade lighting wherever it is profitable. EPA provides technical assistance to the participants through a decision support software package, workshops and manuals, and a financing registry. EPA's Office of Air and Radiation is responsible for operating the Green Lights Program. (Contact: Susan Bullard at 202-233-9065 or the Green Light/Energy Star Hotline at 202-775-6650)

WasteWi\$e Program

The WasteWi\$e Program was started in 1994 by EPA's Office of Solid Waste and Emergency Response. The program is aimed at reducing municipal solid wastes by promoting waste minimization, recycling collection, and the manufacturing and purchase of recycled products. As of 1994, the program had about 300 companies as members, including a number of major corporations. Members agree to identify and implement actions to reduce their solid wastes and must provide EPA with their waste reduction goals along with yearly progress reports. EPA in turn provides technical assistance to member companies and allows the use of the WasteWi\$e logo for promotional purposes. (Contact: Lynda Wynn, 202-260-0700 or the WasteWi\$e Hotline at 1-800-372-9473)

Climate Wise Recognition Program

The Climate Change Action Plan was initiated in response to the U.S. commitment to reduce greenhouse gas emissions in accordance with the Climate Change Convention of the 1990 Earth Summit. As part of the Climate Change Action

Plan, the Climate Wise Recognition Program is a partnership initiative run jointly by EPA and the Department of Energy. The program is designed to reduce greenhouse gas emissions by encouraging reductions across all sectors of the economy, encouraging participation in the full range of Climate Change Action Plan initiatives, and fostering innovation. Participants in the program are required to identify and commit to actions that reduce greenhouse gas emissions. The program, in turn, gives organizations early recognition for their reduction commitments; provides technical assistance through consulting services, workshops, and guides; and provides access to the program's centralized information system. At EPA, the program is operated by the Air and Energy Policy Division within the Office of Policy Planning and Evaluation. (Contact: Pamela Herman, 202-260-4407)

NICE³

The U.S. Department of Energy and EPA's Office of Pollution Prevention are jointly administering a grant program called The National Industrial Competitiveness through Energy, Environment, and Economics (NICE³). By providing grants of up to 50 percent of the total project cost, the program encourages industry to reduce industrial waste at its source and become more energy-efficient and cost-competitive through waste minimization efforts. Grants are used by industry to design, test, demonstrate, and assess the feasibility of new processes and/or equipment with the potential to reduce pollution and increase energy efficiency. The program is open to all industries; however, priority is given to proposals from participants in the pulp and paper, chemicals, primary metals, and petroleum and coal products sectors. (Contact: DOE's Golden Field Office, 303-275-4729)

XII.C. Trade Association/Industry Sponsored Activity

Various trade associations represent the interests of the nonferrous metals industry. Some of these organizations are discussed in greater detail below.

Aluminum

The Aluminum Association (AA) 900 19th Street, NW Washington, DC 20006 Phone: (202) 862-5100	Members: 86 Staff: 27 Budget: \$4,300,000 Contact: David N. Parker
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Founded in 1933, AA represents producers of aluminum and manufacturers of semi-fabricated aluminum products. This association represents members' interest in legislative activity and it also conducts seminars and workshops. Its committees cover such topics as legislative/regulatory affairs, environmental affairs, product standards, technical activities and programs, and health and safety. AA maintains a library of 3000 volumes on aluminum technology and the aluminum industry. Its publications include: *Aluminum Association Report* (10 times per year); *Aluminum Standards and Data* (biennially); *Aluminum Statistical Review* (annually); *World Aluminum Abstracts* (monthly), and a free catalog listing all of its publications, reprints, and audiovisual material. AA also maintains the *World Aluminum Abstracts* data base.

Aluminum Recycling Association (ARA) 1000 16th St. NW, Ste. 603 Washington, DC 20036 Phone: (202) 785-0951	Members: 20 Contact: Richard M. Cooperman
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Founded in 1929, ARA represents producers of aluminum specification alloys refined from scrap aluminum. ARA has three committees: Environmental Protection, Government Liaison, and Technical. The association was formerly known separately as the Aluminum Research Institute, the Aluminum Smelters Research Institute, and the Aluminum Smelting and Recycling Institute. ARA publishes *Quarterly Reports on Industry Shipments* as well as a brochure.

Copper

International Copper Association (ICA) 260 Madison Ave. New York, NY 10016 Phone: (212) 251-7240 Fax: (202) 251-7245	Members: 42 Staff: 11 Budget: \$ 9,000,000 Contact: Dr. William Drescher
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Formerly known as the Copper Products Development Association, ICA represents both copper producing and copper fabricating companies. ICA works in concert with commercial, institutional, and university laboratories to conduct research on, and market development of, new and improved uses of copper. The association along with its committees, Chemical and Environmental Advisory; Corrosion Advisory; Electrical Advisory; Metallurgy Advisory; and Program Review conduct seminars and maintain a 300 volume library. ICA publishes an annual report in addition to a monograph series.

Copper and Brass Fabricators Council (CBFC) 1050 17th St. NW, Ste. 440 Washington, DC 20036 Phone: (202) 833-8575 Fax: (202) 331-8267	Contact: Joseph. L. Mayer
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CBFC represents copper and brass fabricators in activities involving foreign trade in copper and brass fabricated products, and Federal regulatory matters including legislation, regulations, rules, controls, and other matter affecting brass and copper fabricators. The association has five committees: Critical Materials; Energy Conservation; EPA Advisory; Foreign Trade; and Government Information. CBFC was formerly known as Copper and Brass Fabricators Foreign Trade Association and was founded in 1966.

Copper Development Association (CDA) 2 Greenwich Office Park Box 1840 Greenwich, CT 06836 Phone: (212) 251-7200 or (800) CDA-DATA	Members: 100 Staff: 20 Contact: M. Payne
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CDA represents domestic and foreign copper mining, smelting, and refining companies, and domestic fabricating companies. Functioning in committees divided along principal market areas such as transportation and construction and electronics, CDA seeks to expand the applications and markets of copper. CDA provides technical services to users of copper and its alloys, and also researches market statistics for the entire industry. *Copper Update* and *Copper Topics*, both published quarterly, are the primary publications of CDA in addition to handbooks,

technical reports, and bulletins. CDA also operates an *Online Copper Data Center* which contains literature from around the world on copper and its alloys.

Lead

Lead Industries Association (LIA) 295 Madison Ave. New York, NY 10017 Phone: (212) 578-4750 Fax: (212) 684-7714	Members: 70 Staff: 4 Contact: Jerome F. Smith
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Founded in 1928, LIA represents mining companies, smelters, refiners, and manufacturers of products containing lead. The association researches and gathers statistics and provides technical services and information to lead consumers. Some of the services LIA provides are a 2000-volume library concerning lead, and association committees focusing on: Battery Manufacturers, Environmental Health, Fabricated Products, Oxide and Chemical, and Solder Manufacturers. LIA publishes a semiannual newsletter, *Lead*, with a circulation of 60,000 that contains articles about the application of lead in architecture, chemicals, and other fields.

Association of Battery Recyclers (ABR) Sanders Lead Co. Corp. Sanders Rd. PO Drawer 707 Troy, AL 36081 Phone: (205) 566-1563	Members: 45 Staff: 1 Contact: N. Kenneth Campbell
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ABR represents recyclers of lead, oxide manufacturers, industry equipment suppliers, and consulting services. The association's goals are to provide information services relating to worker safety and environmental controls through continuing industry-wide studies. ABR conducts research in: engineering and administrative controls, respiratory protection, and environmental and biological monitoring. ABR was known as the Secondary Lead Smelters Association until 1990.

Zinc

Independent Zinc Alloyers Association (IZAA) 1000 16th St. NW, Ste. 603 Washington, DC 20036 Phone: (202) 785-0558	Members: 15 Contact: Richard M. Cooperman
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Founded in 1959, IZAA represents producers of zinc alloys for the die casting industry. The association has one committee which focuses on International Trade.

XIII. RESOURCE MATERIALS/BIBLIOGRAPHY

For further information on selected topics within the nonferrous metals industry, a list of publications is provided below:

General Profile and Pollution Prevention

An Appraisal of Minerals Availability for 34 Commodities, U.S. Department of the Interior, Bureau of Mines, Bulletin 892, 1987.

Aluminum Facts, and other materials provided by the Aluminum Association, Washington, DC, 1995.

Copper Technology Competitiveness, U.S. Congress, Office of Technology Assessment, OTA-E-367, September, 1988.

Encyclopedia of Associations, 27th ed., Deborah M. Burek, ed., Gale Research Inc., Detroit, Michigan, 1992.

Enforcement Accomplishments Report, FY 1991, U.S. EPA, Office of Enforcement (EPA/300-R92-008), April 1992.

Enforcement Accomplishments Report, FY 1992, U.S. EPA, Office of Enforcement (EPA/230-R93-001), April 1993.

Enforcement Accomplishments Report, FY 1993, U.S. EPA, Office of Enforcement (EPA/300-R94-003), April 1994.

Industry & Trade Summary - Aluminum, U.S. International Trade Commission, USITC Publication 2706, April 1994.

Industry & Trade Summary - Copper, U.S. International Trade Commission, USITC Publication 2623 (MM-4), April 1993.

Information provided by the U.S. Department of the Interior, Bureau of Mines, 1995.

McGraw-Hill Encyclopedia of Science & Technology, Vol. 1, 3, 6, and 19, McGraw-Hill Book Company, New York, NY, 1987, 1992.

Report to Congress on Metal Recovery, Environmental Regulation & Hazardous Waste, U.S. Environmental Protection Agency (EPA/530-R-93-018), February 1994.

Standard Industrial Classification Manual, Office of Management and Budget, 1987.

U.S. Industrial Outlook 1994 - Metals, U.S. Department of Commerce.

1987 Census of Manufacturers Industry Series 33C: Smelting and Refining - Nonferrous Metals, U.S. Bureau of the Census, April 1990. (MC87-I-33C)

1987 Census of Manufacturers Industry Series 33D: Metal Mills and Primary Metal, U.S. Bureau of the Census, April 1990. (MC87-I-33D)

1992 Toxic Release Inventory (TRI) Public Data Release, U.S. EPA, Office of Pollution Prevention and Toxics, April 1994. (EPA/745-R94-001)

The Plain English Guide to the Clean Air Act, U.S. EPA Office of Air and Radiation, 400-K-93-001.

Environmental Law Handbook, Government Institutes, Inc., 11th edition, Rockville, MD 1991.

Process Descriptions

Air Pollution Engineering Manual, Anthony J. Buonicore and Wayne T. Davis, ed., Air & Waste Management Association, Van Nostrand Reinhold, New York, NY, 1992.

Background Listing Document for K065, U.S. EPA.

Background Listing Document for K088, U.S. EPA.

Compilation of Air Pollutant Emission Factors (AP 42), U.S. EPA, Office of Air Quality Planning and Standards.

Information provided by the International Copper Association, Ltd.

Recycled Metals in The United States, A Sustainable Resource, U.S. Department of the Interior, Bureau of Mines, Special Publication, October 1992.

Report to Congress on Special Wastes From Mineral Processing: Summary and Findings, Methods and Analyses, Appendices, U.S. EPA, Office of Solid Waste and Emergency Response (530/SW-90-070C), 1990.

¹ TOXNET is a computer system run by the National Library of Medicine that includes a number of toxicological databases managed by EPA, National Cancer Institute, and the National Institute for Occupational Safety and Health. For more information on TOXNET, contact the TOXNET help line at 1-800-231-3766. Databases included in TOXNET are: CCRIS (Chemical Carcinogenesis Research

Information System), DART (Developmental and Reproductive Toxicity Database), DBIR (Directory of Biotechnology Information Resources), EMICBACK (Environmental Mutagen Information Center Backfile), GENE-TOX (Genetic Toxicology), HSDB (Hazardous Substances Data Bank), IRIS (Integrated Risk Information System), RTECS (Registry of Toxic Effects of Chemical Substances), and TRI (Toxic Chemical Release Inventory). HSDB contains chemical-specific information on manufacturing and use, chemical and physical properties, safety and handling, toxicity and biomedical effects, pharmacology, environmental fate and exposure potential, exposure standards and regulations, monitoring and analysis methods, and additional references.

² EPA Regions include the following States: I (CT, MA, ME, RI, NH, VT); II (NJ, NY, PR, VI); III (DC, DE, MD, PA, VA, WV); IV (AL, FL, GA, KY, MS, NC, SC, TN); V (IL, IN, MI, MN, OH, WI); VI (AR, LA, NM, OK, TX); VII (IX KS, MO, NE); VIII (CO, MT, ND, SD, UT, WY); IX (AZ, CA, HI, NV, Pacific Trust Territories); 10 (AK, ID, OR, WA).